ABSTRACT OF THE DISCLOSURE

A method and system for a migration executor of an on-line data migration engine is utilized to provide data migration of a user's data in a data storage system while maintaining application performance guarantees. In particular, the migration executor includes a monitor module configured to monitor performance metrics of a computer system executing foreground applications and the on-line data migration, where quality-of-service parameters computed from the performance metrics are forwarded to a controller module. The controller module of the migration executor is configured to compare the quality-of-service parameters of the computer system with performance goals for the foreground applications. The controller module may be further configured to issue commands to an actuator module that is configured to increase or decrease the rate of the data migration, where the actuator module is further configured to perform the data migration by executing a migration plan. The migration executor further includes a logical-volume ("LV") mover, which is configured to move blocks of data within the data storage system of the computer system in response to a command from the actuator.